POPULATION, LABOUR FORCE, AND LONG-TERM ECONOMIC GROWTH

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IESOP Research Paper No. 25

December 1997

The Program for Research on the Independence and Economic Security of the Older Population is an interdisciplinary research program established at McMaster University with support from Health Canada's Seniors' Independence Research Program. The Research Paper series provides a vehicle for distributing the results of studies undertaken by those associated with the program. Authors take full responsibility for all expressions of opinion.

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Note: This paper is cross-listed as Research Report No. 336 in the McMaster University QSEP Research Institute series.

Abstract

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The Canadian population is aging as the children of the "baby boom" move into and through middle age and then on toward the retirement years. The "baby bust" that followed the boom has slowed the rate of population growth and reduced sharply the supply of young people entering the labour force. The rates of participation of women in the labour force are now approaching those of men and little can be expected in the way of continuing further growth from that source. Immigration has thus taken on an important role in determining the rates of population and labour force growth. We explore these and related issues and draw out their implications for Canada's economic growth prospects.

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POPULATION, LABOUR FORCE, AND LONG-TERM ECONOMIC GROWTH[*]

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1. INTRODUCTION

Fundamental long-run changes are underway in the Canadian population -- changes that will have important and far-reaching consequences for the economy, and for the society at large. The population is slowly aging (in a collective sense) as the children of the "baby boom" move into and through middle age, and then on towards the retirement years. The "baby bust" that followed the boom has slowed the rate of population growth and reduced sharply the supply of young people entering the labour force. The rates of participation of women in the labour force are now approaching those of men and little can be expected in the way of continuing further growth from that source; indeed, in recent years the increases of women's rates have been offset by sharp declines in male rates at the older working ages. Against this background, immigration has taken on an important role in determining the rates of population and labour force growth, and its role in that regard will almost certainly continue far into the future. We explore these and related issues in what follows, and draw out their implications for Canada's economic growth prospects.

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[*] Christine Feaver carried out the calculations for this paper and prepared the tables and figures. The work on which the paper is based was supported by a grant from Health Canada under the terms of its Seniors' Independence Research Program. The paper draws heavily on material in Denton, Feaver, and Spencer (1997b) and Denton and Spencer (1998); a modified version will appear in Policy Options.

2. THE AGING OF THE POPULATION

The root cause of population aging lies in the history of fertility. The total fertility rate was three children per woman or higher from the mid-1940s to the mid-1960s, and almost four during the late 1950s.[1] As boom gave way to bust it then fell rapidly, and by 1972 it had dropped below 2.1, the level required for the population to replace itself naturally in the long run. The rate has remained below that level for the past quarter-century. In 1995 (the latest year for which a figure is available) it was a little more than 1.6. The annual series of rates is displayed in Figure 1.

The median age of the population fell during the baby boom, and then started to rise as fertility rates declined and the children of the boom years moved on into adulthood. The median age was about 25 in 1966. By 1996 it had risen to 35, and our projections suggest that over the next four decades it may increase by another ten years.

Again, in 1966 more than 40 percent of the population were under the age of 20; by 1996 the proportion was 27 percent, and falling. At the other end of the age spectrum, the population aged 65 and over represented only 8 percent of the total as late as the early 1970s; by 1996 its share had moved above 12 percent, and was continuing to rise.

The population medians and percentage distributions are recorded in Table 1 at five-year intervals, from 1951 to 1996. They leave no doubt as to the slow but relentless trend towards an older population.

3. THE SLOWING PACE OF LABOUR FORCE GROWTH

The rate of growth of the population declined in the 1960s and 1970s as fertility rates fell (Table 1). Effects on the labour force were inevitable, of course, but they were delayed for two decades or so, and the members of the baby boom generation were still moving into the job market as late as the beginning of the 1980s. The period of rapid growth came to an end quite abruptly at that

point. The labour force, which had grown by almost 18 percent between 1971 and 1976, and another 17 percent between 1976 and 1981, increased by only 8.5 percent between 1981 and 1986 (Table 2). By the 1990s the rate was cut in half again -- a little over 4 percent between 1991 and 1996. Had it not been for the relatively high levels of immigration of recent years the rate would have been much lower still.

4. THE END OF THE ERA OF RISING LABOUR FORCE PARTICIPATION RATES

The coming of working age of young people has not been the only source of postwar labour force growth. Immigration has been important in some periods (more on that below), and the phenomenal rise in the labour force participation rates of women has been important too.

Annual average rates of labour force participation are shown in Figure 2 for men and women in age groups from 15-19 to 65 and over, for the period 1951 to 1996. The rates for women increased greatly at all ages over that period, from the 20-24 age group up to the 55-64 group. The rate for women 25-34 rose from 24.9 percent to 77.6 percent, the rate for women 35-44 from 22.3 to 78.6, and the rate for women 45-54 from 21.2 to 71.9. Quite remarkable changes by any standard.

As the rates for women were rising the rates for men were declining. For the most part the declines were relatively modest when compared with the increases in the female rates. In the age groups 55-64 and 65 and over, though, they were quite substantial. In 1951 about 87 percent of all men in the 55-64 group were in the labour force; by 1996 the rate had dropped to only 59 percent.

The rising participation rates for women and the falling rates for men have sharply reduced the male/female gaps. At the youngest ages there is hardly any gap at all now; at ages above that the female rates are still lower than the male rates but the differences are much less pronounced than in earlier decades. The scope for further narrowing seems quite limited.

The effects of these changes are reflected in the proportionate shares of women in the labour

force. Overall, women accounted for 45 percent of the Canadian labour force in 1996, compared with only 23 percent in 1951. The history of the percentage shares is provided in Figure 3, for broad age groups and for the labour force as a whole.

The effects are reflected also in the changes that have occurred in the median age of women in the labour force, compared with the corresponding median for men. The two series of medians are shown in Figure 4, and the convergence is striking. In 1951 the median age was 29.0 for working women, 37.6 for working men; in 1996 the medians were 37.1 and 37.8.

The rising rates of participation of women have been of great importance in the postwar development of the labour force, and of great importance therefore for the economy. But the era seems to be over now. Figure 2 suggests that the female rates have more or less levelled off. Some further increases are certainly possible, but so too are further decreases in male rates. Overall, it seems unlikely that changes in participation rates will be a source of much continuing growth in the foreseeable future, and they may even be a source of decline.

5. INCREASING DEPENDENCE ON IMMIGRATION

With inflows of young people into the labour force constrained by past low fertility and female participation rates levelling off, immigration becomes the focus of attention. Immigration has been a highly volatile element in postwar population growth, ranging from a high of 282 thousand in 1957 to a low of 72 thousand in 1961. Net immigration (the difference between incoming and outgoing migrants) was overshadowed by natural increase (births minus deaths) from the 1950s through to the mid-1980s. In the past decade, though, the two have accounted for almost equal shares of population growth: between 1986 and 1996, net immigration accounted for 48 percent of the increase in the Canadian population. The percentage shares of natural increase and net immigration are shown in Figure 5 for five-year intervals from 1951-56 to 1991-96.

The contribution of net immigration to labour force growth has also varied. In the early 1950s more than half of the increase in the labour force was attributable to net immigration, which in no small measure thus contributed to the rapid economic expansion of that period. Its share then fell sharply, and remained low until the latter part of the 1980s. Between 1986 and 1991, though, its share of total labour force growth was 46 percent, by our estimate, and between 1991 and 1996 it was 71 percent. In other words, seven-tenths of the increase in the Canadian work force in that most recent five-year period is attributable to net immigration, only three-tenths to sources within the Canadian population.

The percentage shares over five-year intervals since 1951 are shown in Figure 6. The figure makes clear the extent to which labour force growth, and hence economic growth, have come to depend on immigration in the past decade. That dependence is likely to continue for a very long time.

6. SOURCES OF ECONOMIC GROWTH SINCE THE 1950s

The rate of growth of the national output, as represented by the real gross domestic product, can be decomposed into several components. The decomposition is based on the identity GDP = (GDP/E)(E/L)(L/N)N, or in per capita terms on GDP/N = (GDP/E)(E/L)(L/N), where E is employment, L is the labour force, and N is the total population. In either case, the annual growth rate of the variable on the left side of the identity is (to a close approximation) equal to the sum of the growth rates of the variables on the right side. Annual average growth rates for the four decades 1956-66 to 1986-96 are shown in Table 3. GDP/E is labour productivity, E/L the employment rate, and L/N the population-wide labour force participation rate.[2]

Table 3 documents the well known declines in the rates of growth of output and output per capita since the 1970s, and the much lower rates of increase in labour productivity. (Between 1956 and

1976 productivity increased at average rates in excess of two percent per year; since 1976 the rates have been less than one percent.) The effects of rising average unemployment rates since the 1960s are evidenced by the negative contributions of E/L. The effects of shifts in the age distribution of the population and the rising, but decelerating, labour force participation rates of women are reflected in the contributions of L/N -- greatest in the decade 1966-76, somewhat smaller in 1976-86, and finally turning negative in 1986-96.

7. LOOKING AHEAD: THE POPULATION AND LABOUR FORCE OVER THE NEXT FOUR DECADES

We offer five sets of projections of the Canadian population and labour force, from 1996 to 2036, based on five alternative sets of assumptions. The first, which may be regarded as a "standard" or "baseline" projection, makes what we refer to as "medium" assumptions. The second and third are based on "faster growth" and "slower growth" assumptions. The final two are intended to show the effects of different rates of immigration; they are based on "zero immigration" and "high immigration" assumptions. The following is a summary description of each set of assumptions; more detail is provided in Denton, Feaver, and Spencer (1997b) and Denton and Spencer (1998).[3]

Medium: The total fertility rate remains at its most recent observed (1995) level of 1.639 births per woman; age-specific mortality rates for men and women continue to decline, but more slowly than in recent decades; gross immigration is 200,000 per year (close to the average of the past decade).

Faster growth: The total fertility rate increases to 2.1 (the long-run natural replacement level) by 2006 and then remains there; age-specific mortality rates decline somewhat faster than in the medium projections; gross immigration increases to 250,000 per year by 1999 and then remains at that level.

Slower growth: The total fertility rate decreases to 1.4 by 2006 and then remains there; age-specific mortality rates decline somewhat more slowly than in the medium projections; gross immigration decreases to 150,000 per year by 1999 and then remains at that level.

Zero immigration: The same as the medium projections except that gross immigration is zero in every year.

High immigration: The same as the medium projections except that gross immigration is 400,000 in every year.

The population projections themselves are shown in Table 4, at ten-year intervals, and the labour force projections in Table 5.

The ten-year population growth rate declines in every decade under the "medium" assumptions. From 13.9 percent in 1986-96 it falls to 10.4 percent in 1996-06, 8.2 percent in 2006-16, 6.2 percent in 2016-26, and finally 3.8 percent in 2026-36, or less than four-tenths of one percent per annum. Even under the "faster growth" assumptions there is continuous downward movement in the growth rate, although of course the decline is not as rapid; by 2026-36 the ten-year rate falls to 9.4 percent. The "slower growth" assumptions produce much more rapid reductions: by 2016-26 the population grows by only 2.4 percent, and by 2026-36 it is actually decreasing.

The importance of immigration in determining the future rate of population growth is clear from the final two projections in Table 4. When immigration is eliminated entirely the population grows by only 3.2 percent in the decade 1996-06, and as early as 2016-26 it stops growing altogether and starts to decline. If the "high immigration" assumption of 400,000 per year is invoked, on the other hand, the rate of growth rises to 17.6 percent in 1996-06. It falls thereafter, dropping to 9.0 percent by 2026-36. If Canadian fertility remains low the population will be increasingly dependent on immigration for future growth. But even 400,000 per year -- a very high level of immigration, by

historical standards -- would be insufficient to keep the growth rate from declining.

The choice of assumptions has some effect on the age distribution of the population. The "medium" assumptions lead to a decrease in the proportion under 20 years of age, from 26.7 percent in 1996 to 20.0 percent by the end of the projection period, and concomitantly an increase in the proportion 65 and over, from 12.2 percent to 24.8 percent. In reflection of the distributional shift, the median age of the population rises from 35.2 to 45.0. The trend toward an older population is strengthened under the "slower growth" and "zero immigration" assumptions, weakened under the "faster growth" and "high immigration" assumptions. In no case though is it reversed. Even the "faster growth" assumptions, with their higher fertility levels, result in 22.6 percent of the population being 65 and over by the end of the projection period, and a median age of 41.0. Of particular note is how little the age distribution is affected by altering the level of immigration: at 200,000 per year (the "medium" assumption) the proportion 65 and over is 24.8 percent by 2036, and the median age is 45.0; at twice that level of immigration maintained over the forty-year projection period (the "high immigration" assumption) the proportion 65 and over is 22.2 percent and the median age 43.4 percent. Clearly the level of immigration is not a very effective policy instrument for influencing the age distribution of the population; very large increases in immigration would be required to bring about rather modest shifts in the proportion of older people.

The labour force projections are provided in Table 5. The rate of growth of the labour force declines only slightly in the decade 1996-06 under the "medium" assumptions, but then falls sharply, and by the last two decades of the projection period it is approximately zero. "Faster growth" assumptions yield growth rates that are positive in every decade; higher fertility rates generate larger inflows of young people into the labour force after two decades or so, and those combine with larger inflows of immigrant workers, under the "faster growth" assumptions. Nevertheless, even under

those assumptions the labour force growth rate is low after 2006, by postwar historical standards. The "slower growth" assumptions lead to virtually no growth by the decade 2006-16, and to declines in the size of the labour force thereafter. Again the dependence on immigration is apparent: substantial reductions in the size of the labour force occur in every decade from 2006-16 on when immigration is set to zero; at 400,000 immigrants per year the growth rates remain positive, although they fall sharply after two decades.

Figures 7 and 8 combine projected and historical population and labour force series in the form of five-year growth rates and show the rates as continuous series from 1951-56 to 2031-36. The projections are the "medium" ones. The long-run downward trends in the two growth-rate series, under the "medium" assumptions, stand out clearly in the figures. Aside from 1986-91, the population growth rate falls in every five-year period from the early 1950s; aside from 1996-01, the labour force growth rate falls in every period from the 1970s until around 2016-21, from which point on it is effectively zero.

A long-run picture of the changing age distribution of the population is provided in Figure 9 in the form of a succession of population "pyramids" (to use a conventional term) at twenty-year intervals from 1956 to 2036, based again on the "medium" assumptions for the projections. The sequence of Canadian pyramids is striking: the age bulge created by the baby boom is seen to work its way through the age distribution, first into the labour force entrance ages, then into middle age, and finally into old age. Even more striking, though, is the sequence for Newfoundland, which we include as an extreme example of how the age distribution can be distorted by low fertility rates, combined with outmigration. From a traditional pyramidal shape in 1956, the distribution for Canada takes on an increasingly rectangular appearance. For Newfoundland, though, it comes to look more like a child's top -- a very large proportion of old and middle-aged adults supported by

a very small base of young people.

8. PRODUCTIVITY REQUIREMENTS FOR FUTURE ECONOMIC GROWTH

Earlier we used the identities GDP = (GDP/E)(E/L)(L/N)N and GDP/N = (GDP/E)(E/L)(L/N) as a basis for decomposing the rates of growth of real GDP and real GDP per capita into components. We now turn the identities around and use them to calculate the rates of growth of labour productivity that would be required in the future to achieve selected GDP and per capita GDP growth rates, given the alternative population and labour force projections. To do that we require one further assumption: we assume (in all cases) that the annual average rate of unemployment will move from 9.7 percent in 1996 to 9.0 percent by 2001, and then remain at that level. (The assumption is not particularly important; the long-run growth calculations are not very sensitive to it.) The results of the calculations are shown in Table 6. To take an example, for illustration, under the "medium" assumptions a rate of growth of 2 percent per annum in total real GDP would require that labour productivity (GDP/E) increase by 0.85 percent per annum in the decade 1996-06, 1.55 percent in the decade 2006-16, 2.01 percent in the decade 2016-26, and 1.97 percent in the decade 2026-36. Results are shown in the table for total GDP growth rates of 0, 1, 2, 3, and 4 percent and for per capita GDP rates of 0, 1, 2, and 3 percent.

The GDP growth rate was a little under 5 percent per year from 1956 to 1976, fell to almost 3 percent in 1976-86, and then to 2 percent in 1986-96 (refer back to Table 3). A 2 percent GDP growth rate could be achieved between 1996 and 2006 with a productivity growth rate of 0.85 percent, under "medium" assumptions, and that would be virtually the same as the actual 1986-96 rate. The total and per capita GDP growth rates could be maintained for another decade without requiring any more rapid increase in the level of aggregate productivity if the medium projection assumptions are more or less accurate. But in order to sustain those rates in the subsequent decades

productivity would have to increase at a faster pace. Moreover, 1986-96 is perhaps not the best benchmark to use; that was a decade of slow growth, by historical standards, and more rapid growth might be hoped for in the future. To raise the GDP per capita rate to 1 percent per year would require substantially faster productivity gains after 2006; to raise it to 2 percent per year would require much faster gains still -- gains even greater than those of the high-growth decades 1956-66 and 1966-76.

The required rates of productivity increase are of course affected by the population and labour force projection assumptions. The requirements to sustain the different rates of total GDP growth vary considerably from one set of projections to another. But the requirements to sustain the rates of growth of per capita GDP vary much less; they are relatively insensitive to the assumptions. The reason, broadly put, is that differences in the projection assumptions affect both total GDP (through effects on the size of the labour force) and the population, so that GDP/N is much less sensitive to the choice of assumptions than is GDP alone.

Whether the productivity requirements for total GDP or per capita GDP are the more important ones depends on which issues are being considered. GDP per capita is clearly the more natural measure of economic welfare (albeit a crude one). But total GDP is an important measure from the point of view of the national debt -- the future debt-to-GDP ratio, in particular. If attention is focussed on the growth of total GDP, then the differences among the projections are very important; if attention is focussed on the growth of per capita GDP they are much less important.

Immigration is likely to be the one potent demographic control instrument available to the Canadian Government. While immigration may be rather ineffective as a means of altering the age distribution, and slowing the rate of population aging, it obviously can be very effective in increasing the size of the labour force, hence aggregate GDP, and hence the debt-to-GDP ratio.

(That is not to recommend for or against its use for that purpose, merely to point out the relationship.)

9. CONCLUSION

The Canadian population is aging, in a collective sense. The proportion of people 65 and over has been rising in the past three decades and is projected roughly to double in the next four. The median age has risen from 25 to 35 and is projected to rise by perhaps another ten years over the same period. The rate of growth of the population has declined, in consequence of low fertility rates, and further declines are anticipated if immigration continues at recent levels. The rate of growth of the labour force has declined also; the inflow of young people into the labour force has been severely restricted by the past low fertility rates and the participation rates of women have started to level off. The economy is now very largely dependent on immigration for labour force growth, and that situation is likely to continue far into the future.

Immigration appears to be the only effective instrument at the national level for controlling population and labour force growth in the next few decades. Population aging seems inevitable; even very high rates of immigration are unlikely to have much effect in that regard. But the size and rate of growth of the population and labour force can obviously be altered substantially by allowing more or fewer people into the country.

The rate of growth of real GDP per capita has been low during the past decade, by previous postwar standards. It could be maintained and even increased somewhat during the next decade if national productivity were to rise at about the same pace as in the past one. Beyond that, though, more rapid increases in productivity would be required to offset anticipated demographic changes, and they would be required even sooner if the relatively slow growth of per capita GDP of recent years were to be replaced by more rapid growth over the next decade.

We have presented five sets of population and labour force projections, based on five different sets of assumptions. The rates of increase in national productivity required to keep GDP per capita growing at any given rate do not vary greatly from one set to another, the implication being that the per capita GDP growth rate is not very sensitive to the choice of demographic assumptions. However, there is considerable variation in the rates of productivity increase required to keep total GDP growing at any chosen rate. The rate of growth of total GDP is linked closely to the rate of growth of the labour force, and that in turn is linked closely to the level of immigration. From the point of view of the management of the national debt, that raises the possibility of using immigration as an instrument for increasing total GDP, and hence reducing the debt-to-GDP ratio. We take no position on whether such a course would be desirable but simply point out the possibility.

FOOTNOTES

1. The total fertility rate is interpreted as the number of liveborn children that would be born per woman over the childbearing age range if the age-specific rates (numbers of births per woman at particular ages) did not change. Because the total fertility rate for a given year is calculated using only data for that year it is known in demography as a period rate, as distinguished from a cohort rate, which would be based on data for successive years to reflect the fact that age-specific rates may vary as a cohort of women ages.

2. It is convenient to think of the growth of GDP/E as a measure of productivity increase but one should keep in mind that it is the net result of a number of factors, including changes in average hours of work, changes in the capital/labour ratio, changes in the educational and skill composition of the labour force, increases in aggregate returns to scale, changes in technology, and others. It is convenient too to think of L/N as an overall labour force participation rate but that is not a conventional definition; the Statistics Canada Labour Force Survey would exclude from the denominator the population under the age of 15 and some other components of the population.

3. The projections were generated using the MEDS projection/simulation program described in Denton, Feaver, and Spencer (1994, 1997a).

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Denton, Frank T., Christine H. Feaver, and Byron G. Spencer (1997b), "Immigration, Labour Force, and the Age Structure of the Population," Research Report No. 335, Research Institute for Quantitative Studies in Economics and Population, McMaster University.

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Figure 1: The Total Fertility Rate: 1940-1995

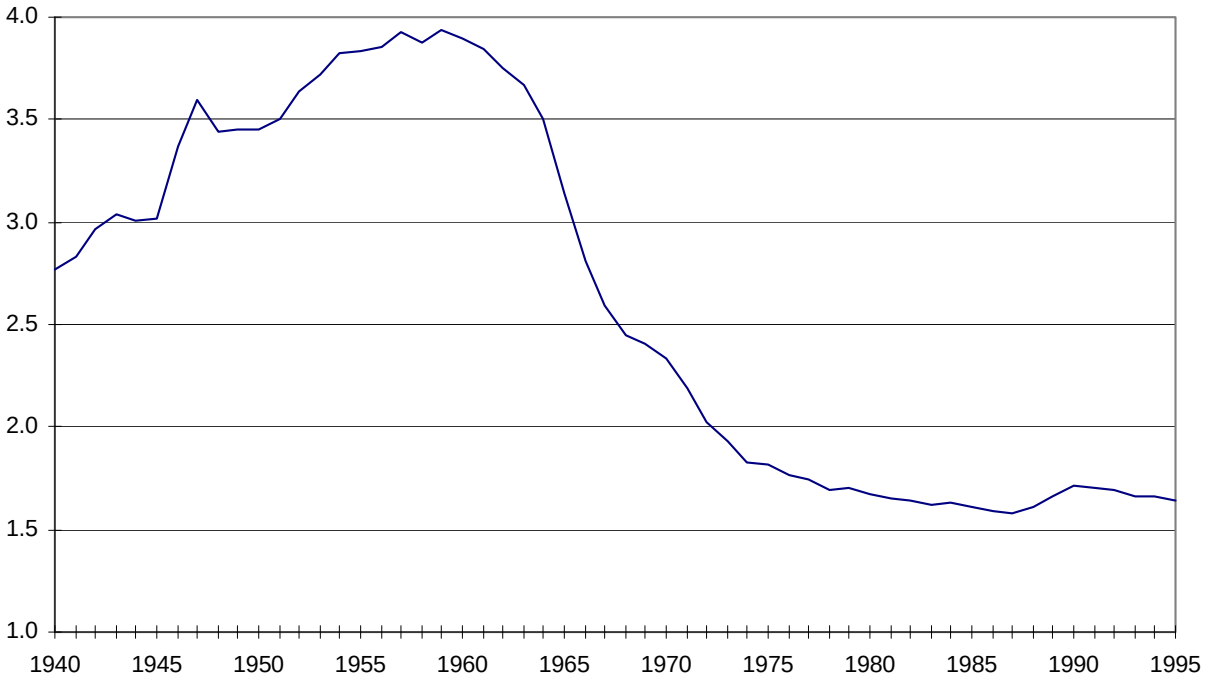


Figure 2: Labour Force Participation Rates by Age Group, 1951-1996

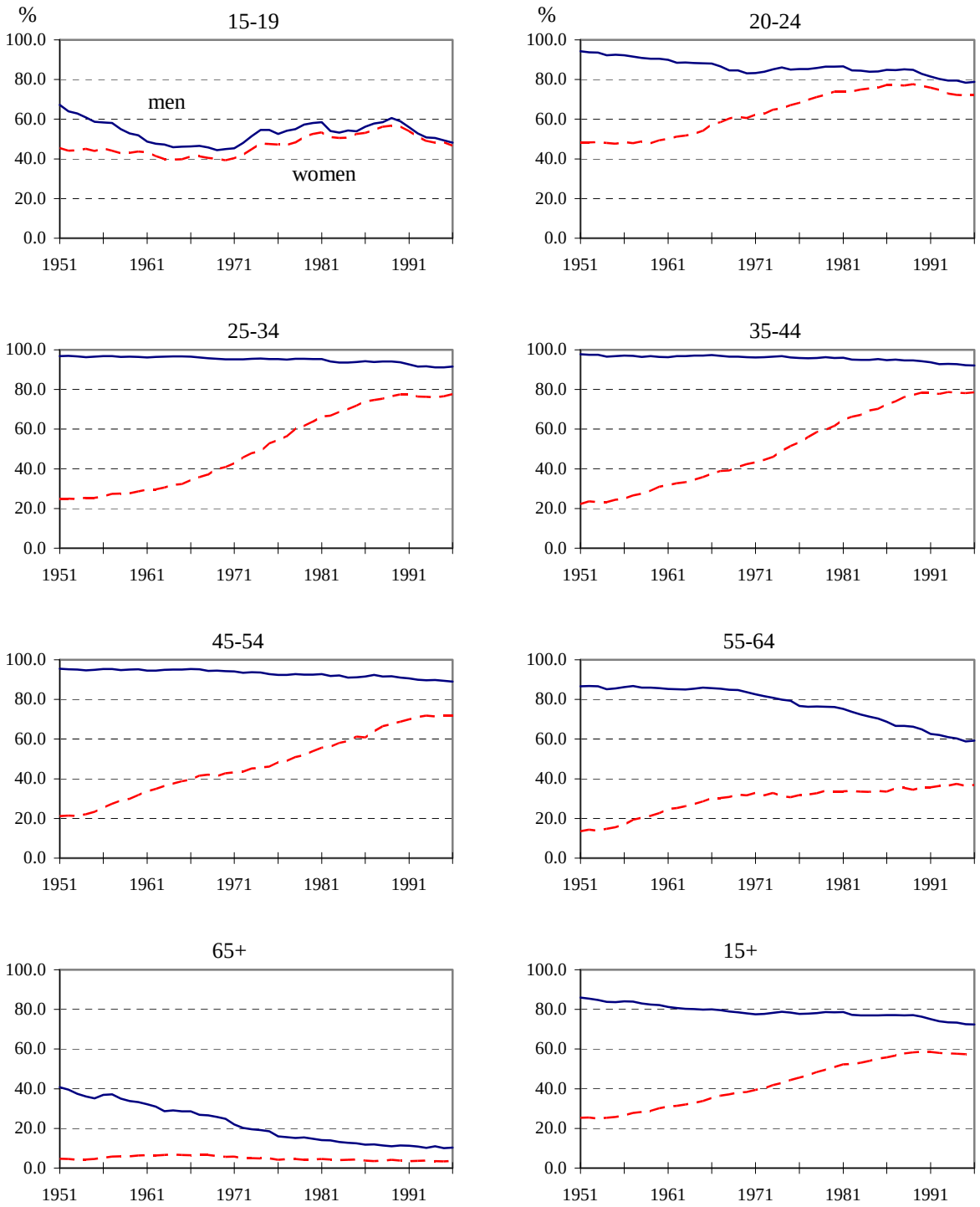


Figure 3: Women as a Percentage of the Labour Force, by Age Group, 1951-1996

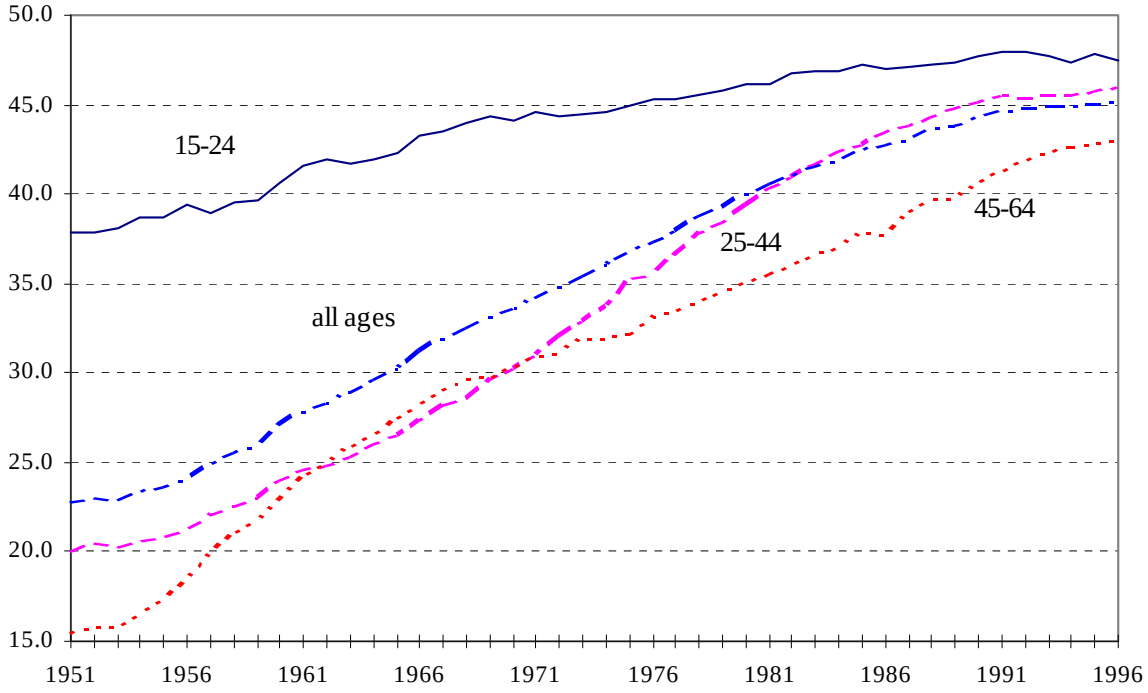


Figure 4: Median Age of Labour Force, Men and Women, 1951-1996

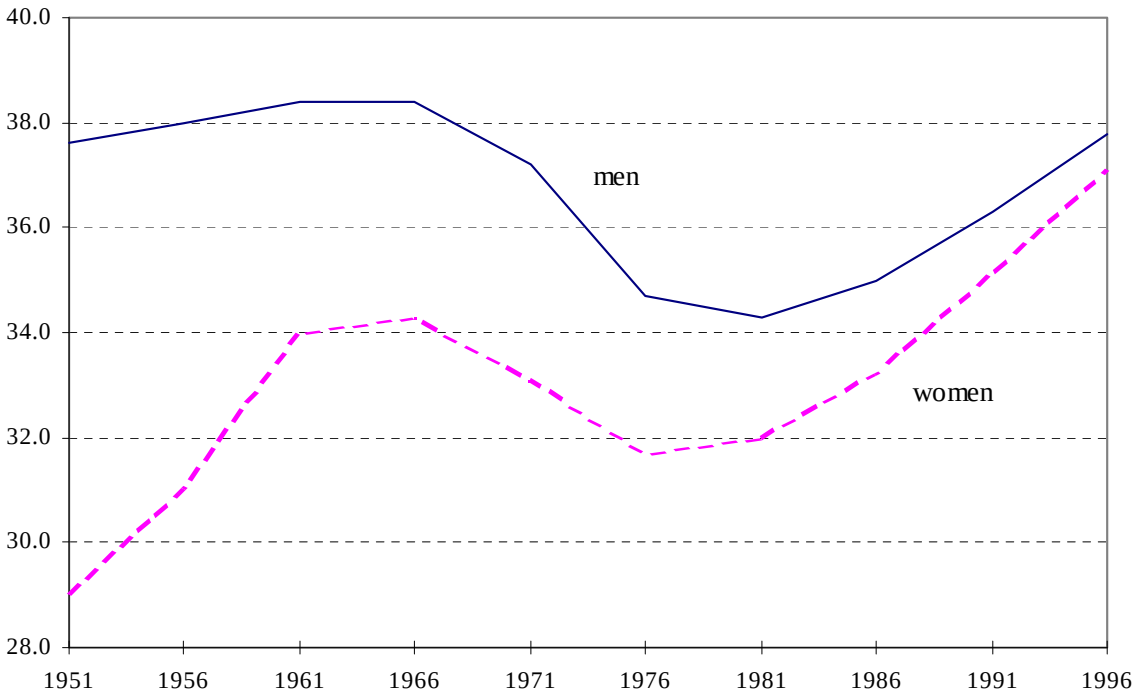


Figure 5: Percentage Shares of Population Growth, 1951-56 to 1991-96

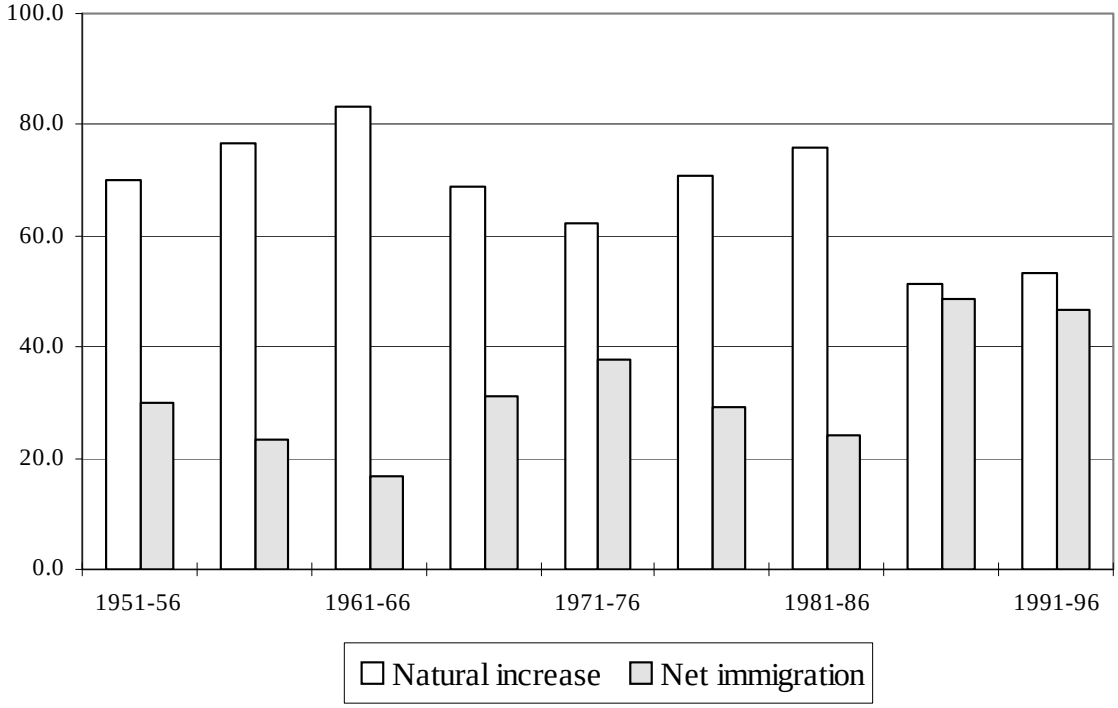


Figure 6: Percentage Share of Labour Force Growth, 1951-56 to 1991-96

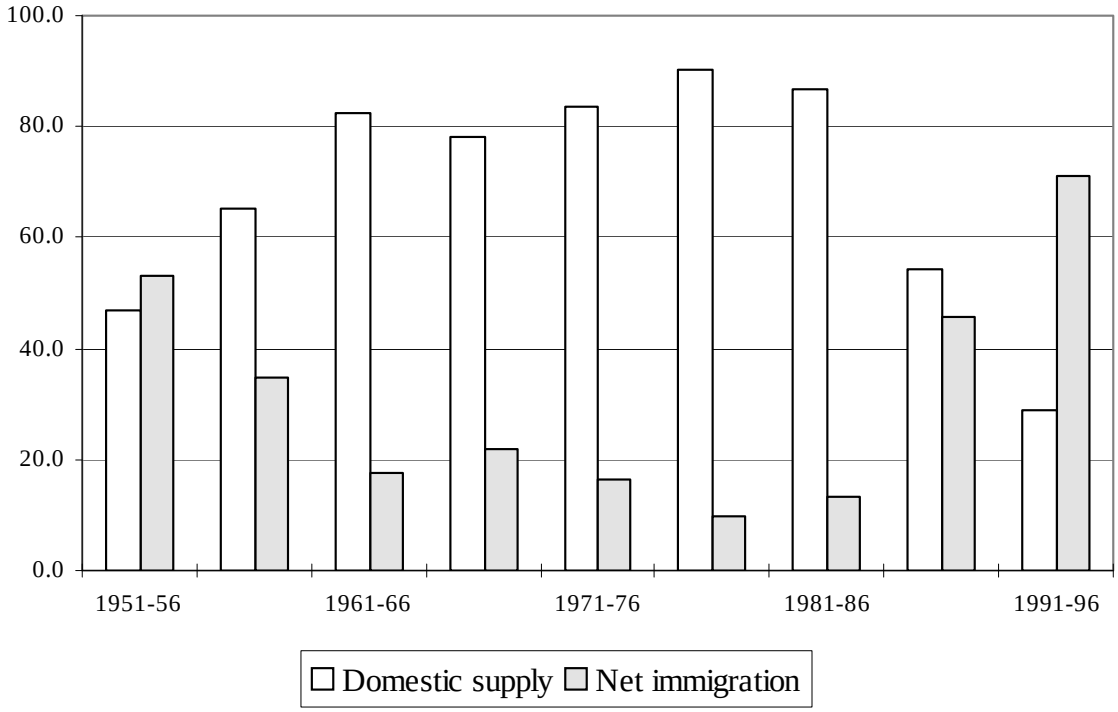
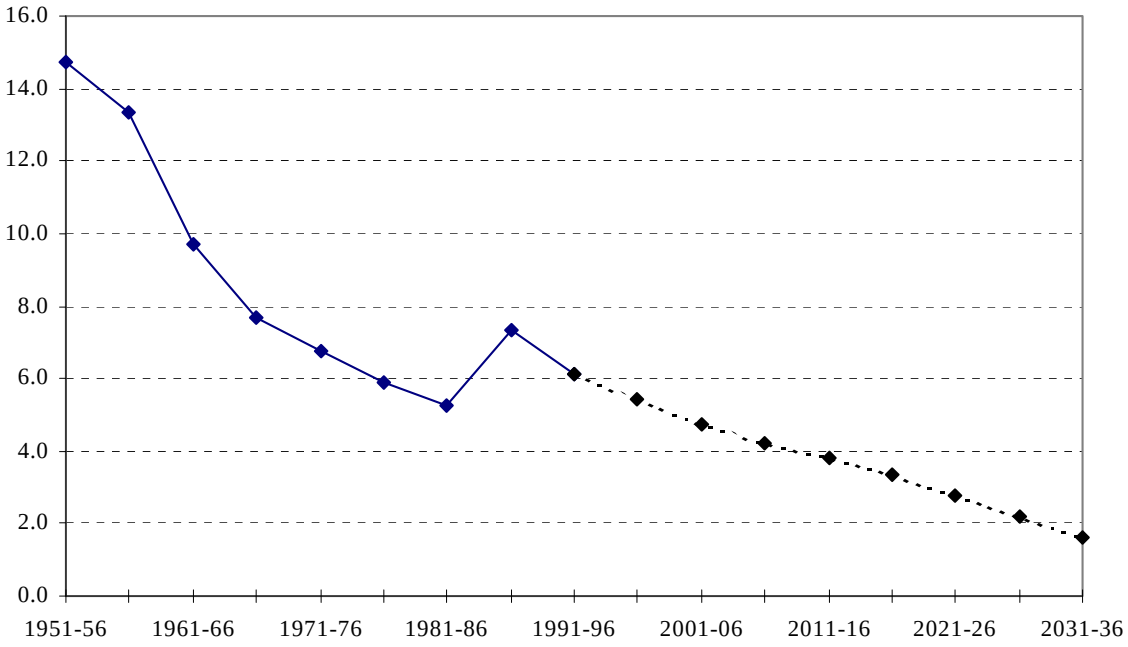
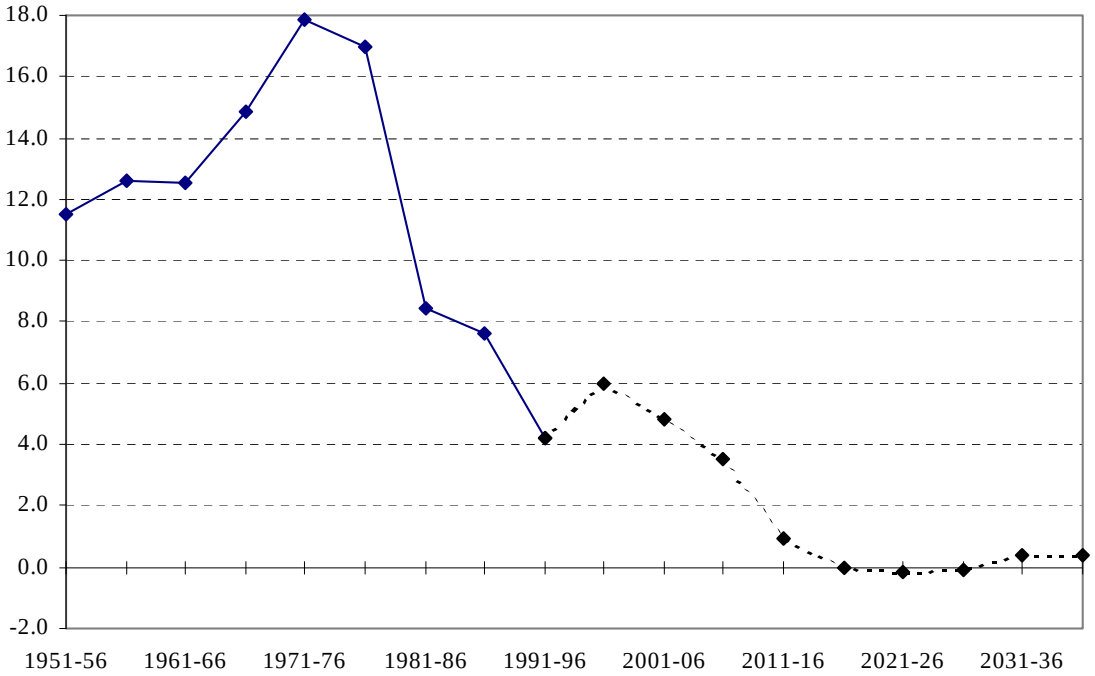


Figure 7: Five-year Percentage Growth Rates: Population, 1951-56 to 2031-36



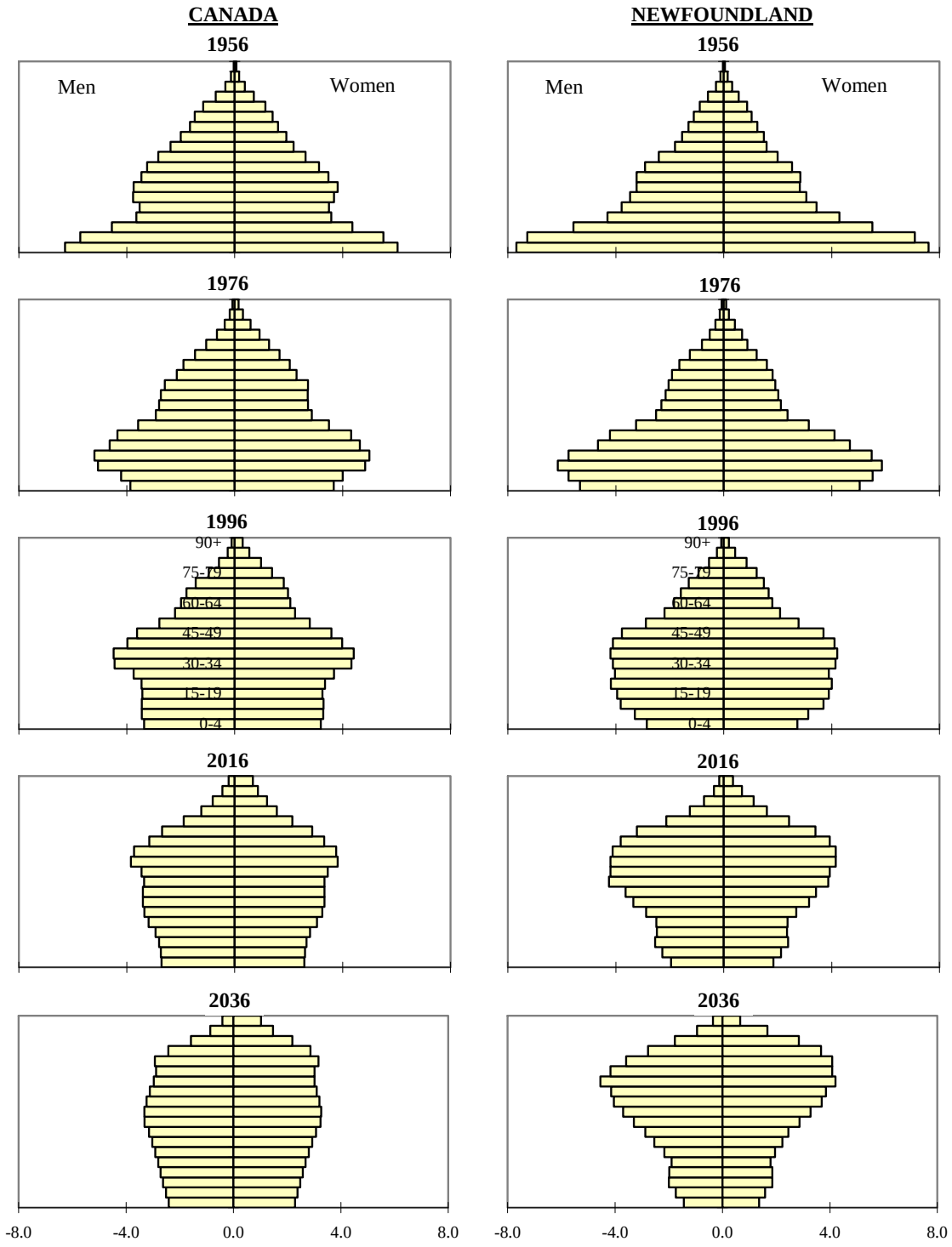
Note: Projected growth rates, represented by the broken line, are based on "medium" assumptions.

Figure 8: Five-year Percentage Growth Rates: Labour Force, 1951-56 to 2031-36



Note: Projected growth rates, represented by the broken line, are based on "medium" assumptions.

Figure 9: Population Age Pyramids, Canada and Newfoundland, 1956-2036



Note: The horizontal bars on each side of the vertical lines represent, for men and women, the percentages of the total population in each five-year group from 0-4 to 85-89 and in the group 90 and over. The projections for 2016 and 2036 are based on "medium" assumptions.

Table 1: The Population and Its Age Distribution, 1951-1996

	Population	Growth, previous 5 years		Age distribution (%)			Median
	('000)	('000)	(%)	Under 20	20-64	65 and over	Age
1951	14,333	--	--	37.9	54.4	7.8	27.7
1956	16,448	2,115	14.8	39.7	52.5	7.7	27.2
1961	18,639	2,191	13.3	41.8	50.6	7.6	26.3
1966	20,452	1,813	9.7	42.1	50.2	7.7	25.4
1971	22,026	1,575	7.7	39.1	52.9	8.0	26.2
1976	23,518	1,491	6.8	35.6	55.8	8.6	27.7
1981	24,900	1,383	5.9	31.8	58.6	9.6	29.5
1986	26,204	1,304	5.2	28.6	60.9	10.5	31.3
1991	28,120	1,916	7.3	27.5	61.0	11.4	33.2
1996	29,841	1,721	6.1	26.7	61.1	12.2	35.2

Table 2: The Labour Force, 1951-1996

	Labour force	Growth, previous 5 years	
	('000)	('000)	(%)
1951	5,563	--	--
1956	6,202	639	11.5
1961	6,983	781	12.6
1966	7,860	877	12.6
1971	9,030	1,170	14.9
1976	10,644	1,614	17.9
1981	12,451	1,807	17.0
1986	13,506	1,055	8.5
1991	14,540	1,034	7.7
1996	15,148	608	4.2

Table 3: Decomposition of Growth of Real GDP into Labour-Related Sources:1956-66 to 1986-96

	GDP	N	GDP/N	GDP/E	E/L	L/N
			--Annual average percentage change--			
1956-66	4.68	2.20	2.42	2.23	0.00	0.19
1966-76	4.85	1.41	3.39	2.12	-0.40	1.65
1976-86	3.13	1.09	2.02	0.97	-0.26	1.31
1986-96	2.02	1.31	0.71	0.88	-0.02	-0.15

Note: GDP -- real gross domestic product; N -- population; E -- employment; L -- labour force.

Table 4: The Future Population: Alternative Projections, 1996-2036

	Population		Growth, previous 10 years		Age distribution (%)			Median age
	('000)	(index)	('000)	(%)	Under 20	20-64	65 and over	
			--"medium" assumptions--					
1996	29,841	100.0	3,637	13.9	26.7	61.2	12.2	35.2
2006	32,945	110.4	3,104	10.4	24.2	62.5	13.3	38.9
2016	35,631	119.4	2,686	8.2	21.9	61.5	16.6	41.4
2026	37,848	126.8	2,217	6.2	20.8	57.7	21.5	43.3
2036	39,293	131.7	1,445	3.8	20.0	55.1	24.8	45.0
			--"faster growth" assumptions--					
1996	29,841	100.0	3,637	13.9	26.7	61.2	12.2	35.2
2006	33,916	113.7	4,075	13.7	25.3	61.6	13.1	38.2
2016	38,365	128.6	4,449	13.1	25.2	59.0	15.9	39.6
2026	42,612	142.8	4,247	11.1	24.9	55.0	20.1	40.6
2036	46,635	156.3	4,023	9.4	24.3	53.1	22.6	41.0
			--"slower growth" assumptions--					
1996	29,841	100.0	3,637	13.9	26.7	61.2	12.2	35.2
2006	32,227	108.0	2,386	8.0	23.5	63.0	13.5	39.3
2016	33,690	112.9	1,463	4.5	19.9	63.0	17.1	42.5
2026	34,492	115.6	802	2.4	18.5	59.2	22.3	44.9
2036	34,238	114.7	-254	-0.7	17.7	56.4	25.9	47.0
			--"zero immigration" assumptions--					
1996	29,841	100.0	3,637	13.9	26.7	61.1	12.2	35.2
2006	30,793	103.2	952	3.2	23.8	62.3	13.9	39.9
2016	31,089	104.2	296	1.0	21.0	60.9	18.1	43.3
2026	30,795	103.2	-294	-0.9	19.7	55.7	24.6	45.8
2036	29,642	99.3	-1,153	-3.7	18.7	52.2	29.1	48.0
			--"high immigration" assumptions--					
1996	29,841	100.0	3,637	13.9	26.7	61.1	12.2	35.2
2006	35,096	117.6	5,255	17.6	24.4	62.7	12.8	38.1
2016	40,172	134.6	5,076	14.5	22.5	62.0	15.5	40.1
2026	44,900	150.5	4,728	11.8	21.6	58.9	19.4	41.8
2036	48,943	164.0	4,043	9.0	20.8	56.9	22.2	43.4

Note: See text for a description of the assumptions underlying each projection.

Table 5: The Future Labour Force: Alternative Projections, 1996-2036

	Labour force		Growth, previous 10 years	
	('000)	(index)	('000)	(%)
		--"medium" assumptions--		
1996	15,148	100.0	1,642	12.2
2006	16,831	111.1	1,683	11.1
2016	17,589	116.1	758	4.5
2026	17,567	116.0	-22	-0.1
2036	17,615	116.3	48	0.3
		--"faster growth" assumptions--		
1996	15,148	100.0	1,642	12.2
2006	17,729	117.0	2,581	17.0
2016	19,219	126.9	1,490	8.4
2026	20,214	133.4	995	5.2
2036	21,537	142.2	1,323	6.5
		--"slower growth" assumptions--		
1996	15,148	100.0	1,642	12.2
2006	16,013	105.7	865	5.7
2016	16,051	106.0	38	0.2
2026	15,391	101.6	-660	-4.1
2036	14,704	97.1	-687	-4.5
		--"zero immigration" assumptions--		
1996	15,148	100.0	1,642	12.2
2006	15,625	103.1	477	3.1
2016	15,059	99.4	-566	-3.6
2026	13,709	90.5	-1,350	-9.0
2036	12,566	83.0	-1,143	-8.3
		--"high immigration" assumptions--		
1996	15,148	100.0	1,642	12.2
2006	18,037	119.1	2,889	19.1
2016	20,119	132.8	2,082	11.5
2026	21,425	141.4	1,306	6.5
2036	22,664	149.6	1,239	5.8

Note: See text for a description of the assumptions underlying each projection.

Table 6: Average Annual Labour Productivity (GDP/E) Increases Required to Achieve Specified Rates of GDP and GDP per Capita (GDP/N) Growth: Alternative Projections, 1996-06 to 2026-36

	To achieve GDP growth rate of--					To achieve GDP/N growth rate of--			
	0%	1.0%	2.0%	3.0%	4.0%	0%	1.0%	2.0%	3.0%
Required % increase in GDP/E									
					--"medium" assumptions--				
1996-06	-1.12	-0.14	0.85	1.84	2.83	-0.14	0.86	1.86	2.85
2006-16	-0.44	0.56	1.55	2.55	3.54	0.34	1.35	2.35	3.35
2016-26	0.01	1.01	2.01	3.01	4.01	0.62	1.62	2.63	3.64
2026-36	-0.03	0.97	1.97	2.97	3.97	0.35	1.35	2.35	3.36
					--"faster growth" assumptions--				
1996-06	-1.64	-0.65	0.33	1.31	2.30	-0.37	0.63	1.62	2.62
2006-16	-0.80	0.19	1.18	2.17	3.16	0.43	1.43	2.44	3.44
2016-26	-0.50	0.49	1.49	2.48	3.48	0.55	1.55	2.56	3.56
2026-36	-0.63	0.36	1.35	2.35	3.34	0.27	1.27	2.27	3.28
					--"slower growth" assumptions--				
1996-06	-0.63	0.36	1.36	2.35	3.34	0.14	1.14	2.14	3.14
2006-16	-0.02	0.98	1.98	2.98	3.98	0.42	1.43	2.43	3.43
2016-26	0.42	1.42	2.43	3.43	4.44	0.66	1.66	2.67	3.68
2026-36	0.46	1.46	2.47	3.47	4.48	0.38	1.39	2.39	3.40
					--"zero immigration" assumptions--				
1996-06	-0.39	0.61	1.61	2.60	3.60	-0.07	0.93	1.92	2.92
2006-16	0.37	1.37	2.38	3.38	4.38	0.47	1.47	2.47	3.48
2016-26	0.94	1.95	2.96	3.97	4.98	0.85	1.86	2.87	3.87
2026-36	0.87	1.88	2.89	3.90	4.91	0.49	1.49	2.50	3.50
					--"higher immigration" assumptions--				
1996-06	-1.81	-0.83	0.16	1.14	2.12	-0.20	0.80	1.79	2.79
2006-16	-1.09	-0.10	0.89	1.88	2.87	0.26	1.26	2.26	3.27
2016-26	-0.63	0.37	1.36	2.36	3.35	0.49	1.49	2.50	3.50
2026-36	-0.56	0.43	1.43	2.42	3.42	0.30	1.30	2.31	3.31

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